

Student Name:

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Sect #: Ser#:

University of Bahrain

College of Information Technology
Department of Computer Science

ITCS242: ASSEMBLY LANGUAGE PROGRAMMING

Quiz #2: IO and Arithmetic

Given an array named *quiz* consisting of 80 signed bytes, answer each of the following questions as indicated: *quiz sbyte 3AH, 2CH, ...*

- 1) Write the needed instructions to store in *bx* register the sum of all elements of array *quiz*.

```
MOV     ECX, LENGTHOF QUIZ
MOV     ESI, 0
MOV     BX, 0
L3:     MOVSB    AX, QUIZ[ESI]
        ADD     BX, AX
        INC     ESI
        LOOP    L3
```

- 2) Write the needed instructions to display the calculated sum in signed decimal and in binary at the beginning of a new line and separated by a tab.

```
CALL    CRLF
MOVSX   EAX, BX
CALL    WRITEINT
MOV     AL, 9
CALL    WRITECHAR
MOVSX   EAX, BX
CALL    WRITEBIN
```

- 3) Write the needed Assembly instructions to swap the first and last elements in array *quiz*.

```
MOV     AH, QUIZ
XCHG    AH, QUIZ[SIZEOF QUIZ-1]
MOV     QUIZ, AH
```

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Given an array named *itcs* consisting of 64 signed words, answer each of the following questions as indicated: *itcs* *sword* 64 *dup* (?)

- 4) Write the needed code to fill the array *itcs* by generating 64 random values in the range **-400** to **+600**.

```
MOV     ECX, LENGTHOF ITCS
MOV     ESI, 0
MOV     EAX, 1001
L4:     CALL    RANDOMRANGE
SUB     EAX, 400
MOV     ITCS[2*ESI], AX
INC     ESI
LOOP    L4
```

- 5) Write the needed instructions to display the contents of array *itcs* in hexadecimal as doublewords at the beginning of a new line and separated by a space.

```
CALL    CRLF
MOV     ESI, ITCS
MOV     ECX, LENGTHOF ITCS/2
CALL    EBX, TYPE ITCS*2
CALL    DUMPMEM
```

- 6) Write the needed Assembly instructions to swap the first and last elements in array *itcs*.

```
MOV     AX, ITCS
XCHG    AX, ITCS[SIZEOF ITCS -2]
MOV     ITCS, AX
```